

**Central Imagery Office**

**Common Imagery Interoperability  
Profile (CIIP)  
for  
Imagery Access**

**24 June 1996**

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## **1 Executive Overview**

The Common Imagery Interoperability Profile (CIIP) for Image Access defines the profile for software interface standards to be used to achieve interoperability between multiple clients and servers within the USIS architecture.

Key interoperable interfaces are defined along with key data interchange standards to assure interoperability among heterogeneous systems. Profiles are defined to support compatibility across multiple library implementations. As required, the profiles will be extended to include definitions of other USIS interfaces. Interfaces for commercial off-the-shelf (COTS)-based exploitation systems and integration of Government off-the-shelf (GOTS)-based tools and services will be included in future revisions to provide guidance for both Government and vendor (commercial) developers of software. The goal of this document is to facilitate development by multiple providers of responsive products that fit within this United States Imagery System (USIS) architecture.

The audience for this document consists of:

1. Government developers of imagery libraries;
2. Government developers of exploitation tools;
3. Commercial developers of libraries, exploitation applications, and tools.

### **1.1 Background**

The intelligence and DoD communities are defining a common computing environment based predominately on commercially developed technology and standards. Implementations that will make up the United States Imagery System (USIS) must operate within this environment.

### **1.2 Purpose**

#### ***1.2.1 Use by Designers and Builders***

The designers and builders of systems will use this standards profile to define the boundaries within which the application software is to be built. The

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boundaries are defined in terms of standards that define an application program interface (API) and the services that are provided through the API, as well as communication protocols and data formats.

### *1.2.2 Use by Procurement Authorities*

This standards profile will be used by procurement authorities to define clearly the requirements that must be met by vendors and development contractors.

## **1.3 Objectives**

The imagery community needs a flexible, community wide framework based on a platform-independent distributed computing technology based on common interfaces between software components. This framework will minimize coordination/interaction between developers but still facilitate interoperability within the specified target USIS environment.

The imagery information infrastructure is being structured and specified such that independent development and procurement efforts can deliver system components that are easily inserted and integrate into the evolving environment. The architecture, interfaces, and profiles of the Common Imagery Interoperability Facilities (CIIF) and other USIS Standards will provide “pre-coordination” among component managers.

The emphasis is to define interfaces sufficiently to specify functionality but not limit or constrain individual implementations.

The Common Imagery Interoperability Profile for Image Access is intended to define the implementation details of the key software interfaces required for the interaction within and among the Library and Exploitation elements of the USIS architecture. In addition to its use by government developers of these elements, it is required that commercial vendors develop products that adhere to these interfaces.

#### 1.4 Scope

This document defines the key interfaces and applicable specifications to the services necessary to add/import new products to the USIS Imagery Libraries, query, search and retrieve image data from those libraries, as well as transfer imagery and image-based products between any elements of the USIS architecture. These interfaces have been defined to support the requirements of the CIO A3I Program and the Defense Airborne Reconnaissance Office (DARO) Common Imagery Ground/Surface System (CIG/SS) Program. Other Common Imagery Interoperability Facilities described in the CIO CIIF Reference Model will be included in subsequent updates as interface specifications are developed to support other programs such as the CIO Exploitation Initiative.

#### 1.5 Approach

The Common Imagery Interoperability Profile provides a standards-based approach to integrating custom developed, commercial off-the-shelf (COTS), and government off-the-shelf (GOTS) applications in a distributed environment. These profiles are intended to provide major interoperability benefits.

The fundamental principle of the CIIP is *common interfaces*. Common interfaces are application program interfaces (API) that are shared by all subsystems in an integrated system and/or all systems in an integrated architecture. They are generic interfaces supported by many types of application software. The architecture will evolve by adding new common interface applications without modifying existing software and allowing independent client and server implementations. This approach contrasts with the traditional *application-specific interfaces* where each application publishes a unique set of interfaces.

The CIIP profiles a set of common standards that support basic interoperability. The current profile definition supports *Image Access* which includes the software interfaces required for:

- a) a user to query and retrieve images and image-based products that match their information needs,
- b) creation of new products and their entry to the libraries with associated metadata,

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- c) establishment of user profiles to provide notification of new images and image-based products that match their information needs, and
- d) delivery of images and image-based products from the libraries or other element to a user-designated location.

As they are defined, *Exploitation Support* software interfaces will be added to this document.

## 1.6 Document Organization

This document is organized as follows:

Section 1 - *Executive Overview* contains overview and background material for the CIIP.

Section 2 - *Applicable Documents* contains the list of other documents cited or referenced in the CIIP. Together with the CIIP, these documents provide the information needed to understand and implement the CIIP.

Section 3 - *CIIP Architectural Context* outlines the applicability of the interfaces included in the CIIP within the USIS architecture.

Section 4 - *Interoperability Requirements* contains the specific standards-related requirements for each System participating in the USIS architecture and effectivities for introduction of these capabilities.

Section 5 - *Verification* contains the methods for assuring compliance to the profiles contained in this document.

Section 6 - *Notes* contains definitions and other information that may be useful to the reader.

Section 7 - Appendices -

*NITF Header Specifications* contains details for populating NITF 2.0 header and sub-header fields.

*A3I Scenarios and Use Cases* contains several scenarios by which users might utilize the capabilities provided by these interfaces within the A3I context.

### 1.7 Document Hierarchy

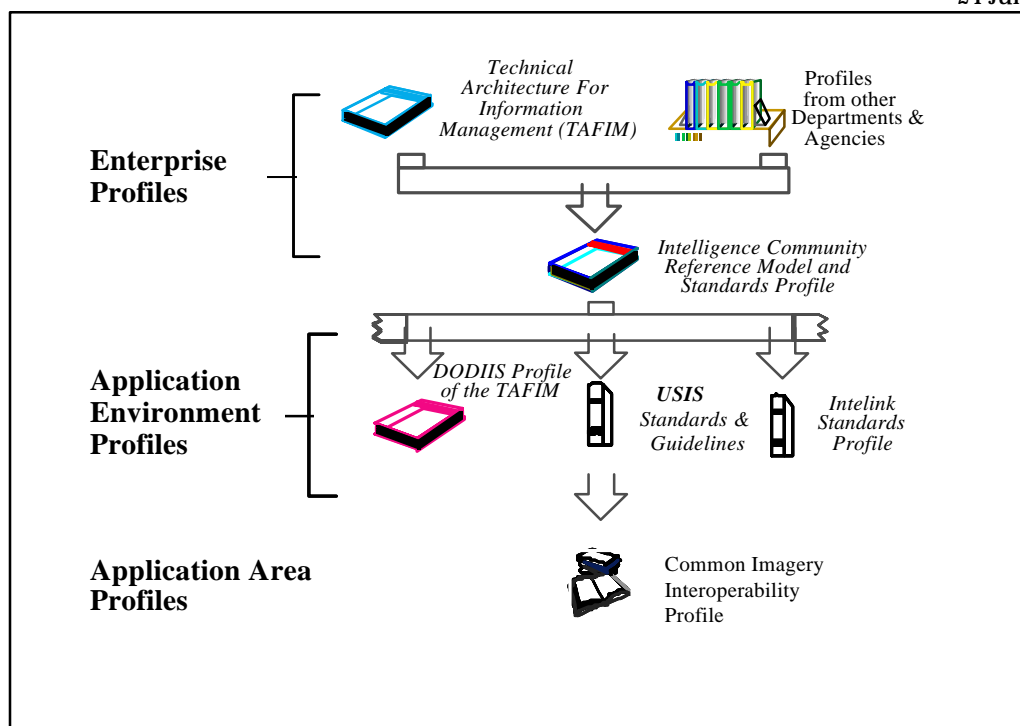
There are multiple tiers of documents specifying the USIS common imagery interfaces. Standards are designed to be as broadly applicable as possible and therefore only contain the most general features and data structures. These general features can be used in many different ways by different domains. However, to guarantee interoperability within a specific domain, everyone using those standards, i.e. developers of client and server implementations, must use them in a consistent manner. These lower level *profiles* serve to document a specific community's standards, conventions, and agreed-to procedures on how that general standard is tailored to that community's requirements. Without these lower level implementation documents to specify the details, it is unlikely that any two developers would make exactly the same interpretation of how to use the standards.

In addition, it is intended that these standards can be extended to accommodate requirements that may be unique to a subset of the total community. The lowest tier documents can contain the implementation details of these extensions without affecting the higher tier documents.

To be most useful, each lower tier profile should contain the following information:

1. Role of the implementation within the overall architecture
2. Scenarios for use
3. Assumptions, limitations, and constraints that need to be reflected in the implementation or use
4. Related facilities. Used with... based on...
5. Metadata that must be provided by service or available from other services
6. Context requirements

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**Figure 1.7-1. CIIP Document Hierarchy**

Figure 1.7-1 shows the hierarchy of documents relating to the CIIP. The CIIP Reference Model, Facility Specifications such as the Image Access Services Specification (IASS), and Facility Test Plan are broad specifications applicable to the entire USIS. They are controlled by the Imagery Standards Management Committee (ISMC). Currently, the Image Access Services (IAS) Specification is being controlled as a development specification as guidance to developers with the objective of migrating the IAS Specification to an ISMC standard after it has been validated through the development process.

This document, the CIIP, is applicable to the USIS development programs being managed by CIO and other organizations. It contains lower level specifications and usage conventions for those CIO standards required by these initiatives. It serves to define a common baseline for those developments making up these initiatives and is controlled by the CIO ICCB and referenced in all joint

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requirements documents (e.g. JRDs, MOUs, MOAs) between CIO and the Program Offices developing software as part of these initiatives.

At the lowest tier, the development program offices may use locally-controlled documents to specify extensions to the CIIP and/or more specific implementation details. These lowest tier documents may also specify effectivities reflecting phased implementation or compliance to the CIIP.

The intent of all documents is to include the implementation specifics at the highest level of commonality. In some cases, details developed for lower tier documents may migrate to higher tier documents and be replaced by pointers to the higher tier document.

## **2 Applicable Documents**

### **2.1 Government Documents**

#### **2.1.1 CIO Documents**

The following documents of exact issue shown (identified by revision letter only) and authorized changes form a part of this specification to the extent specified herein.

1. *Military Handbook for the National Image Transmission Format Standards (NITFS)*, MIL-HDBK-1300A, 12 October 1994
2. *National Image Transmission Format (NITF) (Version 2.0) for the National Image Transmission Format Standards (NITFS)*, MIL-STD-2500A, 12 October 1994
3. *Support Data Extensions (SDE) (Version 1.1) for the National Imagery Transmission Format (Version 2.0) of the National Imagery Format Standard*, 15 April 1995, TCS-037-011/95
4. *Central Imagery Office United States Imagery System Standards Profile for Imagery Archive (SPIA)*, Version 1.0, 20 July 1994 (CIO ASD SIA 0594 0000)
5. *Central Imagery Office United States Imagery System Standards Profile for Image Distribution (SPID)*, Version 1.0, 20 July 1994 (CIO ASD SID 0794 0000)
6. *Imagery Access Services Specification*, Version 1.0, 20 June , 1996
7. *Joint Photographic Experts Group (JPEG) Image Compression for the National Image Transmission Format Standards (NITFS)*, MIL-STD-188-198A, 15 December 1993 with Change Notice 1, 12 October 1994
8. *National Imagery Transmission Format Standards (NITFS) Certification Test & Evaluation Program Plan*, JIEO Circular 9008, 30 June 1993 with Errata Sheet dated 23 February 1994
9. *Computer Graphics Metafile (CGM) Implementation Standard for the National Image Transmission Format Standards (NITFS)*, MIL-STD-2301, 18 June 1993 with Change Notice 1, 12 October 1994



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10. *Profile for Imagery Archive Extensions (PIAE) Version 2.0 for the National Imagery Transmission Format (Version 2.0) of the National Imagery Transmission Format Standards (NITFS)*, 25 April 1996
11. *Demonstration Management Plan for the A3I*, (CIO-2160), 1996

### **2.1.2 Program Office Documents**

The following documents of exact issue shown (identified by revision letter only) and authorized changes form a part of this specification to the extent specified herein.

1. *CIO to National Photint Programs Interface Specification (IF200EAA)*
2. *CIO to National Photint Programs Interface Specification (IF300EAA)*
3. *Tape Formats Requirements Document (TFRD)*, S2025P, TCS-055B-BA02767-93
4. *National Image Transmission Format Implementation Requirements Document (NITFIRD)*, S2035A, TCS055B-BA00039-95
5. *Interface Control Document for IPL 1.0/1.1*, 1947089A, 19 April 1996

## **2.2 Non-Government Documents**

### **2.2.1 Other Standards Documents**

1. *Tagged Image File Format (TIFF) Revision 6.0*, June 3, 1992

## **2.3 Other Documents**

These documents provide additional information which may facilitate a reader's understanding of the material contained within this volume:

1. *Central Imagery Office (CIO) Common Imagery Interoperability Facilities Reference Model*, Version 1.0, 1 March 1996
2. *A3I User's Concept of Operations (CONOPS)*, 10 October 1995
3. *Community Imagery Needs Forecast*
4. *Technical Architecture Requirements Document (TARD)*, Version 1, 13 October 1995
5. *United States Imagery System (USIS) Architecture Migration Plan*

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6. *USIS Functional Managers Architecture Guidance FY 98-03 (Final)*, V 0.1, November 1995
7. *USIS Initiative Definition Document (IDD) for the A3I*, V 1.3, 14 December 1994
8. *USIS Objective Architecture Definition and Evolution*, Version 1.0, 13 October 1995
9. *USIS Objective CONOPS*
10. *USIS Standards and Guidelines*, Version 1.0, 13 October 1995
11. *USIS 2000 CONOPS*
12. *CORBA facilities: The Common Facilities Architecture*, Version 4.0, Object Management Group, Framingham, MA, November, 1995.
13. *CORBA services: Common Object Services Specification*, Revised Edition, Object Management Group, Framingham, MA, March, 1995.
14. *Object Query Service Specification: Joint Submission*, Document 95.1.1, Object Management Group, Framingham, MA, December, 1993.
15. *CORBA: The Common Object Request Broker Architecture and Specification*, Revision 2.0, Object Management Group, Framingham, MA, OMG Document Number 93.12.43, December, 1993.
16. *The Central Imagery Office (CIO) and IMINT Directorate Joint Requirements Document for the United States Imagery System (USIS) 2000 Accelerated Architecture Acquisition Initiative (A3I)*, Version 1.0, 18 January 1996 (CIO-2042)
17. *The Central Imagery Office (CIO) A3I Requirements Document (ARD)*, V2.0, 7 May 1996.
18. *Central Imagery Office (CIO) and Rome Laboratory Joint Requirements Document for the United States Imagery System (USIS) 2000 Accelerated Architecture Acquisition Initiative (A3I)* (CIO-2045), June, 1996 (TBR-008)

### 3 CIIP Architectural Context

#### 3.1 USIS Library and Dissemination Architecture

The USIS Architecture is shown in Figure 3.1-1.

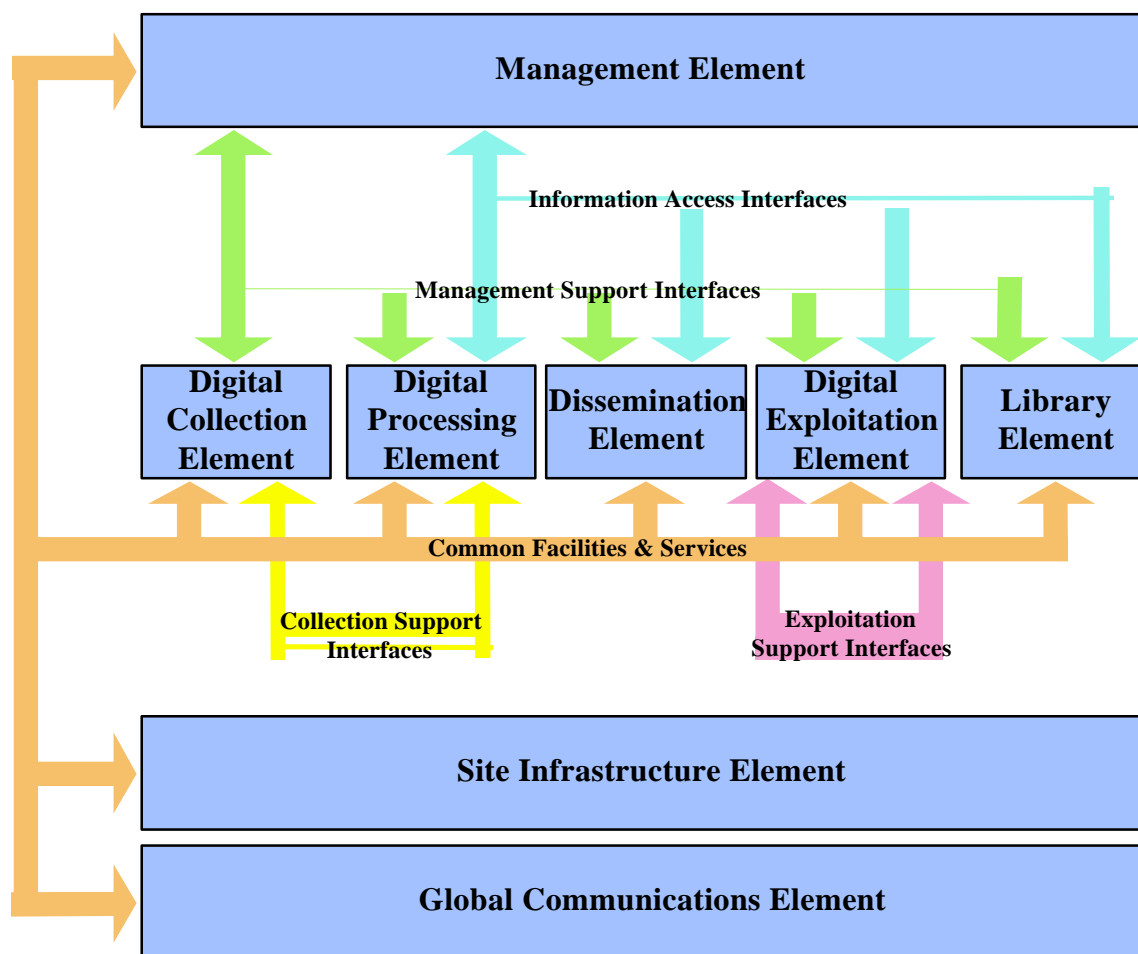


Figure 3.1-1 - USIS Architecture and Common Interfaces

1. The USIS architecture includes the Library and Dissemination elements and the Information Access interfaces between those elements and other elements of the architecture.

##### 3.1.1 USIS Image Access Services

USIS Image Access Services Architecture is shown in Figure 3.1.1-1.

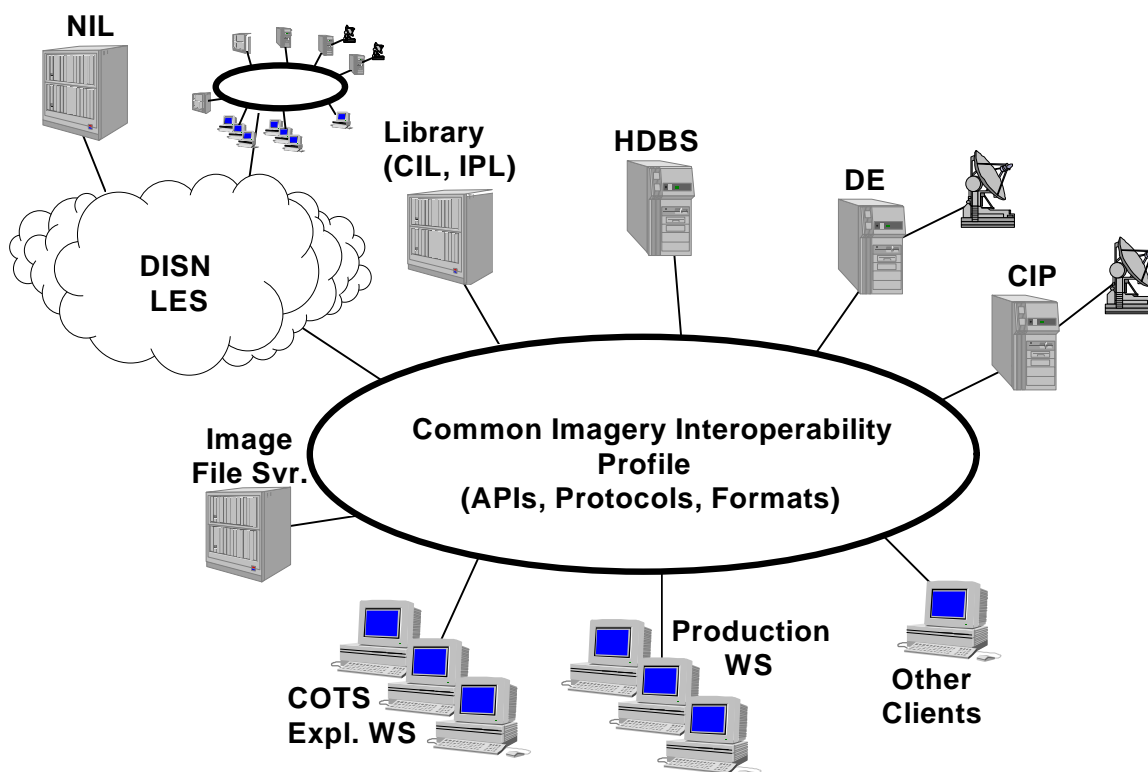


Figure 3.1.1-1 - USIS Image Access Services Architecture

The following services are elements of the USIS Image Access Architecture and as such will implement the interfaces specified in Section 4 of this document:

1. Library Services provided by the National Image Library (NIL), Command Image Libraries (CIL), and Image Product Libraries (IPL)
2. Primary Dissemination Services provided by the Dissemination Element (DE)
3. Exploitation Services provided by commercial applications augmented by Government Off-the-Shelf (GOTS) modules
4. Product Generation Services provided by workstation-based applications such as Target Materials Workstation (TMWS)
5. Exploitation Management Services provided by Host Data Base Systems such as Image Exploitation Support System (IESS)
6. Dissemination Management Services provided by Host Data Base Systems such as Image Exploitation Support System (IESS)

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7. Digital Processing Services such as provided by the Common Imagery Processor (CIP) for Tactical data

### ***3.1.2 Client Applications***

The availability of a set of common, open interface specifications for image access provides flexibility for the development of client applications. In some cases developers may choose to integrate some or all of the interfaces within a workstation application to provide a seamless view to the user. Other situations may require development of a client which implements a group of interfaces to support a set of functional requirements. Finally, although least desirable, a client application may be developed to support a specific server implementation of these interfaces.

Client applications within the A3I architecture will be resident on Commercial Analyst Workstations (CAWS) or other COTS-based exploitation workstations. In addition, workstations providing image-based product generation, all-source analysis tools, or any other function requiring access to the USIS Image Libraries will host CIIP-compliant clients.

### **3.2 Image Access Services Interfaces**

The interfaces specified in the Image Access Services Specification, Ver. 1.0 support the following A3I functional requirements:

1. Query - The ability for a user to determine if a library contains data meeting specific criteria.
2. Response - The ability for a library to return the results of a query to the user.
3. Request - The ability to initiate a transfer of data from one location to another designated location.
4. Disseminate - The ability to transfer data from one location to another designated location.
5. Store - The ability to add new data to a library.
6. Profile - The ability to register an interest profile with a library or dissemination element which will notify a user when new data meeting specific criteria is received by that element.

7. Notify - The ability to inform a user that new data has been received meeting specific interest criteria.

Table 3.2-1 indicates the interaction between the Image Access Services and clients.

TO: FROM:	Primary Dissem. Services	Library Services	Exploit- ation Services	Product Gen. Services	Expl. Mgmt. Services	Dissem. Mgmt. Services	Gen. Library Client	Digital Proc. Services
Primary Dissem. Services		D	Rs,D,N	Rs,D,N				
Library Services		Rq,D,P	Rs,D,N	Rs,D,N	N		Rs,D,N	
Exploitation Services		Q,Rq,S,P	D	D		Rq		
Product Gen. Services		Q,Rq,S,P	D	D				
Exploitation Mgmt. Services	Rq,P	Rq,P	N			Rq		Rq
Dissem. Mgmt. Services	Rq							Rq
Gen. Library Client		Q,Rq,S,P						
Digital Proc. Services		D			N			

Q=Query      Rs=Response      Rq=Request      P=Profile      N=Notify      S=Store  
D=Disseminate

Table 3.2-1 Image Access Interface Interaction (TBR-007)

### 3.3 Referenced Standards

#### 3.3.1 *National Imagery Transmission Format Standards (NITFS)*

The *National Imagery Transmission Format (NITF)*, is the preferred image file format standard published and maintained by the CIO. NITF is an imagery compound document specification that enables the storage of imagery and many image-related products along with the applicable metadata in a single file. Support for NITF is required for exploitation tools. The Image Access Facility will fully support NITF image transfers, but will also support TFRD, TIFF and others.

A set of *Support Data Extensions (SDEs) to NITF 2.0* have been defined to contain the Exploitation Support Data (ESD) as described in IF200EA/IF300EA for National imagery in the NITF file structure. SDEs for tactical and commercial imagery are also being developed.

#### 3.3.2 *Standards Profile for Image Distribution (SPID)*

The *Standards Profile for Image Distribution (SPID)* provides definition and identification of the specific industry and government standards necessary to allow connectivity of distributors' and users' systems for transfer of image files. It defines network, format, and protocol standards for electronic transfer as well as standards for media distribution of imagery.

#### 3.3.3 *Standards Profile for Image Archives (SPIA)*

The *Standards Profile for Imagery Archives (SPIA)* provides definitions of applicable terminology, references, rationale, and identification of recommended standard data directory elements for imagery archives.

A set of *Profile for Imagery Archive Extensions (PIAE) to NITF 2.0* have been defined to contain the applicable SPIA data elements within the NITF file structure.

#### 3.3.4 *Image Access Services (IAS) Specification*

The *Image Access Services (IAS) Specification* addresses the core application program interfaces (API) of the USIS for client access to imagery and image-based products. The supported operations include image product discovery,

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metadata attribute retrieval, whole product retrieval, image region retrieval, and client product creation.

The *IAS Specification* defines the APIs for the Image Access Facility (IAF), the Catalog Access Facility (CAF), the Profile and Notification Facility (P&NF), and the Imagery Dissemination Facility (IDF) defined in the *Common Imagery Interoperability Facilities (CIIF) Reference Model*.



## ***4 Interoperability Requirements***

### **4.1 Imagery Access Interoperability Requirements**

This Section contains the minimum set of requirements needed to achieve interoperability between Systems exchanging imagery and image-based product data within the USIS.

The following USIS Systems shall conform to the interoperability requirements specified in paragraph 4.1:

1. National Image Library (NIL)
2. Command Image Library (CIL)
3. Image Product Library (IPL)
4. Dissemination Element (DE)
5. Common Imagery Processor (CIP)
6. Commercial Exploitation Systems
7. Other Client Applications requiring access to the A3I Libraries
8. Exploitation/Dissemination Management System(s):
  - a) Image Exploitation Support System (IESS)
  - b) National Exploitation System (NES)

#### ***4.1.1 Standard Computing Environment***

##### **4.1.1.1 Distributed Computing Services**

Systems shall utilize a common set of Distributed Computing Services for exchanging information as specified in (TBD-001).

#### ***4.1.2 Standard Application Interfaces***

##### **4.1.2.1 Common Imagery Interoperability Facilities**

Systems shall conform to the Application Program Interfaces (API) as defined in *Imagery Access Services Specification, Version 1.0*, May, 1996 per Table 4.1.2.1-1. Table 4.1.2.1-1 indicates whether the system is a *bearer* (B) or presenter of the

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interface, the *audience* (A) or caller of the interface, or both. Effectivities other than A3I IOC are indicated as Enn.

Interfaces in Table 4.1.2.1-1 shall be implemented by each specified USIS System in accordance with the implementation details specified in paragraph 4.1.2.1.1.

	NIL , CIL		IPL		DE		Expl Sys.		Expl/ Dissem Mgmt		CIP		Other Clients	
	B	A	B	A	B	A	B	A	B	A	B	A	B	A
<b>Server</b>														
<i>open</i>	X	X	X	X	X			X		X	X			X
<i>close</i>	X	X	X	X	X			X		X	X			X
<b>Parameters</b>														
<i>get_parameters</i>	X	X	X	X	X			X		X	X	X		X
<i>set_parameters</i>	X	X	X	X	X			X		X	X			
<b>CatalogAccess</b>														
<i>boolean_query</i>	X		X		X			X						X
<i>elliptical_query</i>	X		X					X						X
<i>point_query</i>	X		X					X						X
<i>polygonal_query</i>	X		X		X			X						X
<i>get_more_results</i>	X		X		X			X						X
<i>free_results</i>	X		X		X			X						X
<b>ImageAccess</b>														
<i>get_subimage</i>	X		X		X			X		X				X
<b>ProductRequest</b>														
<i>disseminate</i>	X	X	X	X	X			X		X	X			X
<i>check_completion</i>	X	X	X	X	X			X		X	X			X
<i>cancel</i>	X	X	X	X	X			X		X	X			X
<i>create</i>	X	X	X	X				X		X				X

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	NIL , CIL		IPL		DE		Expl Sys.		Expl/ Dissem Mgmt		CIP		Other Clients	
	B	A	B	A	B	A	B	A	B	A	B	A	B	A
<b>ArrayRequest</b>														
<i>open_array</i>	X							X						
<i>close_array</i>	X							X						
<i>get_region</i>	X							X						
<i>get_multiple_region</i>	X							X						
<b>Profile&amp;Notification</b>	X	X	X	X	X	X		X		X	X			X
<b>Dissemination</b>	X	X	X	X	X	X		X		X	X			X

Table 4.1.2.1-1 - USIS Implementation of Imagery Access Services (TBR-002)

## 4.1.2.1.1 Image Access Services Facility Implementation Details

## 4.1.2.1.1.1 Storage and Retrieval Facility

Systems shall implement the Storage and Retrieval Facility as specified in the *Image Access Services Specification, Ver. 1.0* in accordance with the information specified in Table 4.1.2.1.1.1-1.

Item	Definition	Value
Request Identification	Request Number	5 N
Location Specification	<u>Product Destination:</u> -Address -Destination Filename -Number of Destinations <u>For each Destination:</u> -Login Name -Password -Address -Path -Host Name	15 N/S 80 A/N 3 N 28 A/N 28 A/N 15 N/S 255 A/S 30 A/N
Creation Attributes	(TBD-004)	

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Item	Definition	Value
Array Element Types	(TBD-005)	
Region Specification	(TBD-006)	
Region Header Attributes	(TBD-007)	
Region Data Specification	(TBD-008)	
• Pixel Data	Vertical Size Horizontal Size Resolution	4N 4N 2N
• Support Data	(TBD-010)	
Access Kind Specification	(TBD-011)	

Table 4.1.2.1.1.1-1 - Storage and Retrieval Implementation Detail (TBR-003)

## 4.1.2.1.1.2 Image Access Facility

Systems shall implement the Image Access Facility as specified in the *Image Access Services Specification, Ver. 1.0* in accordance with the information specified in Table 4.1.2.1.1.2-1.

Item	Definition	Value
Product Reference	Product Specification: -Access/Image ID	64 A/N
Exceptions	Message	80 A/N
Client Context Information	(TBD-014)	
Parameters	(TBD-015)	
Image Location Specification	<u>Storage Location:</u> -Library	15 N/S

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Item	Definition	Value
	-File Number	7 N

Table 4.1.2.1.1.2-1 - Image Access Facility Implementation Detail (TBR-004)

## 4.1.2.1.1.3 Catalog Access Facility

Systems shall implement the Catalog Access Facility as specified in the *Image Access Services Specification, Ver. 1.0* in accordance with the information specified in Table 4.1.2.1.1.3-1.

Item	Definition	Value
Query Result Attributes	(TBD-017)	
Browse Image Specification	Vertical Size Horizontal Size Resolution	4N="1024" 4N="1024" 2N="08"
Query Attribute Sets	(TBD-019)	

Table 4.1.2.1.1.3-1 - Catalog Access Facility Implementation Detail (TBR-005)

## 4.1.2.1.1.3.1 Standard Metadata

USIS Systems shall support user queries using the metadata elements specified in the *Central Imagery Office United States Imagery System Standards Profile for Imagery Archive (SPIA), Ver. 1.0*, (CIO ASD SIA 0594 0000).

USIS Systems shall support users queries of commercial satellite imagery using the additional metadata elements specified in Table 4.1.2.1.1.3.1-1.

ELEMENT	ABBR	CHAR TYPE	ELEMENT LENGTH	ELEMENT DESCRIPTION	PERMISSIBLE VALUES
SATELLITE TRACK	SATTRACK	N	8	Identifies location of an image acquired along the satellite path.	Minimum value: PATH(J) = 0001 ROW(K) = 0001 Maximum value: PATH(J) = 9999

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ELEMENT	ABBR	CHAR TYPE	ELEMENT LENGTH	ELEMENT DESCRIPTION	PERMISSIBLE VALUES
					ROW(K) = 9999 (recorded as PATH/ROW = 00010001 to 99999999)
SATELLITE IDENTIFICATION	SATID	A/N	1 to 10	Unique satellite identifier	ALMA, ALMAZ1B, ERS1, ERS2, IERS1, IRS1B, LANDSAT4, LANDSAT5, MOS1, MOS1B, RADARSAT, SPOT1, SPOT2, SPOT3 The following values are TBR: LANDSAT7, NOAA6+, LEWIS, CLARK, EOSAM, EOSAM1, SEASTAR, EARTHWATCH, EYEGLASS, SPACEIM, RES21, SPOT4, SPOT5, IRS1A, IRS1B, IRSP2, IRS1C, IRS1D, ADEOS, RES2002
PREPROCESSING	PREPROC	A/N	1 to 20	Identifies the type of radiometric and geometric processing applied against the product by the commercial vendor.	LEVEL1A LEVEL1B SPOTVIEWPRECISION SPOTVIEWWORTH0
LICENSE	LIC	A/N	1 to 10	Indicates the Government organizations that have legal authority to use the image in accordance with provisions specified in the contract between the purchaser and commercial vendor.	CIA = Central Intelligence Agency CIO = Central Imagery Office DIA = Defense Intelligence Agency NPIC = National Photographic Interpretation Center DOD = Department of Defense ARMY = US Army NAVY = US Navy AF = US Air Force MARINES = US Marine Corps ACOM = US Atlantic Command CENTCOM = US Central Command EUCOM = US European Command PACOM = US Pacific Command SOUTHCOM = US Southern Command SOCOM = US Special Operations Command TRANSCOM = US Transportation Command

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ELEMENT	ABBR	CHAR TYPE	ELEMENT LENGTH	ELEMENT DESCRIPTION	PERMISSIBLE VALUES
					IC = Intelligence Community FG = Federal Government

Table 4.1.2.1.1.3.1-1 Additional Metadata Elements for  
Commercial Satellite Imagery

USIS Systems shall support users queries of commercial satellite imagery using the modified SPIA metadata elements specified in Table 4.1.2.1.1.3.1-2.

ELEMENT	ABBR	CHAR TYPE	ELEMENT LENGTH	ELEMENT DESCRIPTION	PERMISSIBLE VALUES
IMAGE COORDINATE SYSTEM	ICORDS	A	4 <u>1 to 10</u>	Indicates the geo-referenced coordinate system or 2-D projection for the image. Required for NITFS.	U = UTM, G = Geodetic, C = Geocentric, N = None <u>ACEA</u> = <u>Albers Conical Equal Area</u> <u>LCC</u> = <u>Lambert Conformal Conic</u> <u>MERC</u> = <u>Mercator</u> <u>OBMERC</u> = <u>Oblique Mercator</u> <u>TRANSMERC</u> = <u>Transverse Mercator</u> <u>POLARST</u> = <u>Polar Stereographic</u> <u>STEREO</u> = <u>Stereographic</u> <u>POLYCON</u> = <u>Polyconic</u> <u>ORTHOGRAPH</u> = <u>Orthographic</u> <u>UTM</u> = <u>Universal Transverse Mercator</u> <u>GEOD</u> = <u>Geodetic</u> <u>GEOC</u> = <u>Geocentric</u> <u>NONE</u> = <u>None</u>

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ELEMENT	ABBR	CHAR TYPE	ELEMENT LENGTH	ELEMENT DESCRIPTION	PERMISSIBLE VALUES
IMAGE ID	IMAGEID	A/N	1-40 <u>60</u>	A system dependent unique image identifier assigned by the collection system or producer	National, Tactical <u>Civil</u> , <u>Commercial</u> , or Handheld Image Ids.
MEAN GSD	MEANGSD	N	<u>5</u> <u>7</u>	The geometric mean of the across and along scan center-to-center distance between contiguous ground samples. Required for NITFS if ESD = Y.	000.0 to 999.9 <u>and 00000.0 to 99999.9</u> Expressed in inches, accuracy = 10%.
Note: Above modifications to MEAN GSD are required to support 1 kilometer (39370.0 inches) GSD data.					
NUMBER OF BANDS	NBANDS	N	1 <u>to 4</u>	Number of bands comprising the image.	1 to 9 <u>and 1 to 1000</u>
Note: Above modifications to NUMBER OF BANDS are required to support hyperspectral sensors.					
SENSOR NAME	SENSNAME	A/N/ Special	1-18	Identifies the name of the sensor used in capturing the image.	As defined in the 1993 Defense Airborne Reconnaissance Master Plan (TCS804720-92), section 2, pages 11 to 115 <u>plus the following sensor names: THEMATIC, MAPPER, MSS, AVHRR, EARLY BIRD1, HRV, LISS1, LISS2, LISS3, MESSR, VIIR, OPSSWIR, MCY, and HYDICE</u>
Note: Above modifications to SENSOR NAME are required to accommodate commercial sensors.					

Table 4.1.2.1.1.3.1-2 Modified SPIA Metadata Elements for  
Commercial Satellite Imagery

#### 4.1.2.1.1.4 Profile and Notification Facility



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Systems shall implement the Profile and Notification Facility as specified in the *Image Access Services Specification, Ver. 1.0* in accordance with the information specified in (TBD-020).

#### 4.1.2.1.1.5 Image Dissemination Facility

Systems shall implement the Image Dissemination Facility as specified in the *Image Access Services Specification, Ver. 1.0* in accordance with the information specified in (TBD-021).

### 4.1.3 Network Access Interfaces

#### 4.1.3.1 Connection Element

Systems shall conform to the Connection Element specification contained in the *CIO Standards Profile for Image Distribution (SPID)* (CIO ASD SID05940000), Version 1 as defined in paragraph 3.2.1.1 with the following addition:

1. Asynchronous Transfer Mode (ATM) as defined by (TBD-022) may be substituted for Fiber Distributed Data Interface (FDDI)

#### 4.1.3.2 Image Transfer element

Systems shall conform to the Image Transfer Element specification contained in the *CIO Standards Profile for Image Distribution (SPID)* (CIO ASD SID05940000), Version 1 as defined in paragraph 3.2.1.2.

#### 4.1.4 File Format Element

Systems shall conform to the File Format Element specification contained in the *CIO Standards Profile for Image Distribution (SPID)* (CIO ASD SID05940000), Version 1 as defined in paragraph 3.2.1.3 with the following additions:

1. Systems shall generate and/or receive imagery and image products in the Tape Format Requirements Document (TFRD) format per Table 4.1.4-1.
2. Systems shall generate and/or receive imagery and image products compressed using the JPEG (8-bit), JPEG (12-bit), 4.3 DPCM, 2.3 DCT, and 1.3 DCT algorithms per Table 4.1.4-1.
3. Systems shall generate and/or receive imagery and image products in TIFF 6.0 format per Table 4.1.4-1.
4. Systems shall generate and/or receive imagery and image products in Sun Raster format per Table 4.1.4-1.

	NIL/CIL		IPL		DE		CIP		Expl. Sys.		Other Clients	
	G	R	G	R	G	R	G	R	G	R	G	R
NITF 2.0:												
Uncomp.	X	X	X	X	X	X	X	O	X	X	X	X
JPEG-8 bit	X	X	X	X		X	X	O	X	X	X	X
JPEG-12 bit	X	X	X	X		X	X		X	X	O	O
TFRD:												
4.3 DPCM		X		X		X				O		O
2.3 DCT		X		X		X				O		O
1.3 DCT		X		X		X				O		O
TIFF 6.0	X	X	X	X		O			O	O	O	O
Sun Raster	X	X	X	X		O			O	O	O	O

G= Generate or produce a file from a different format

R= Receive, process, and store file

X= Required capability

O= Optional capability (may not be present at all system locations based on local requirements)

Table 4.1.4-1 - Format and Compression Requirements (TBR-006)

#### 4.1.4.1 National Image Transmission Format Standards (NITFS) Files

The following requirements shall apply to all NITF 2.0 files generated by USIS Systems.

##### 4.1.4.1.1 NITF Header

All USIS Systems shall populate the NITF 2.0 header fields as specified in Table A-I of the *CIO Standard Profile for Image Distribution (SPID)*. Specific

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implementation of NITF 2.0 header fields shall be as specified in Appendix 7.1-Table 7.1-1.

#### 4.1.4.1.2 *Image Sub-Files*

##### 4.1.4.1.2.1 Image Sub-Header

All USIS Systems shall populate the NITF 2.0 image sub-header fields as specified in Table A-II of the *CIO Standard Profile for Image Distribution (SPID)*. Specific implementation of NITF 2.0 header fields shall be as specified in Appendix 7.2-Table 7.2-1.

##### 4.1.4.1.2.2 Image Data

###### 4.1.4.1.2.2.1 *Image Data Compression*

Systems generating image files in NITF 2.0 format shall provide the image data in uncompressed format and compress the image data using one of the following algorithms:

1. Eight-bit image data shall be compressed using JPEG DCT as specified in *Joint Photographic Experts Group for the National Image Transmission Format (NITFS)*, MIL-STD-188-198A.
2. Image data greater than eight-bits shall be compressed using 12-bit JPEG DCT as specified in paragraph 30.3 of the *National Image Transmission Format Implementation Requirements Document (NITFIRD)*, S2035A, TCS055B-BA00039-95.

#### 4.1.4.1.3 *Symbol Sub-Files*

##### 4.1.4.1.3.1 Symbol Sub-Header

All USIS Systems shall populate the NITF 2.0 symbol sub-header fields as specified in Table VI of the *National Imagery Transmission Format-Version 2.0 (MIL-STD-2500A)*. Specific implementation of NITF 2.0 symbol sub-header fields shall be as specified in Appendix 7.3-Table 7.3-1.

##### 4.1.4.1.3.2 Symbol Data

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All annotation requirements (including alphanumeric labels) shall be satisfied by USIS Systems in accordance with *the National Imagery Transmission Format-Version 2.0 (MIL-STD-2500A)*, para. 5.6.

#### 4.1.4.1.4 Text Sub-Files

##### 4.1.4.1.4.1 Text Sub-Header

USIS Systems shall populate the NITF 2.0 text sub-header fields as specified in Table VI of *the National Imagery Transmission Format-Version 2.0 (MIL-STD-2500A)*. Specific implementation of NITF 2.0 text sub-header fields shall be as specified in Appendix 7.4-Table 7.4-1.

##### 4.1.4.1.4.2 Text Data

USIS Systems text data sub-files shall be created in accordance with the *National Imagery Transmission Format-Version 2.0 (MIL-STD-2500A)*, para. 5.8.

#### 4.1.4.1.5 Data Extensions

##### 4.1.4.1.5.1 Support Data Extensions

USIS Systems shall store exploitation support data applicable to the image data in NITFS Controlled Data Extensions as documented in *Support Data Extensions (v1.1) for the NITF 2.0*, TCS-037-028/94, 10 June 1994.

##### 4.1.4.1.5.2 Profile for Imagery Archive Extensions

USIS Systems shall store and process metadata applicable to the image product in NITFS Controlled Data Extensions as documented in *National Image Transmission Format Standard Profile for Imagery Archive Extensions (NITFS PIAE)*, 20 July 1994.

##### 4.1.4.1.5.3 Compression Extensions

USIS Systems compressing image data with the 12-bit JPEG algorithm shall include the Controlled Data Extensions as documented in Appendix 10.2 of the *National Image Transmission Format Implementation Requirements Document (NITFIRD)*, S2035A, TCS055B-BA00039-95.

#### 4.1.4.2 Tape Format Requirements Document (TFRD) Files

4.1.4.2.1 *Image Data*

USIS Systems generating image files in TFRD format shall format the image data as specified in paragraph 3.1.4 of the *Tape Format Requirements Document*, S2025P, TCS-055B-BA02767-93.

4.1.4.2.1.1 *Image Data Compression*

USIS Systems generating image files in TFRD format shall compress the image data using one of the following algorithms:

1. Discrete Cosine Transform (DCT) as specified in Appendix 10.1 or 10.9 of the *Tape Format Requirements Document*, S2025P, TCS-055B-BA02767-93.
2. Differential Pulse Code Modulation (DPCM) as specified in Appendix 10.3 of the *Tape Format Requirements Document*, S2025P, TCS-055B-BA02767-93.

4.1.4.2.2 *Metadata*

USIS Systems shall include the available metadata with imagery and image products.

For TFRD files, USIS Systems shall transfer metadata in the Support Block as defined in paragraph 3.1.3 of the *Tape Format Requirements Document (TFRD)*, S2025P, TCS-055B-BA02767-93.

4.1.4.3 *Tagged Image File Format Files*

4.1.4.3.1 *Image Data*

USIS Systems shall format the image data within TIFF files in accordance with *TIFF*, Revision 6.0, Final-June 3, 1992.

4.1.4.3.2 *Metadata*

USIS Systems shall include the available metadata with imagery and image products.

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USIS Systems shall provide metadata associated with TIFF formatted files using the IPL Data File defined in paragraph 50.8 of the *Interface Control Document for IPL 1.0/1.1*, April, 1996.

The IPL Data File shall be named in accordance with paragraph 30.1.1 of the *Interface Control Document for IPL 1.0/1.1*, 1947089A, April, 1996.

#### 4.1.4.4 Sun Raster Files

##### 4.1.4.4.1 Image Data

USIS Systems shall format the image data within Sun Raster files in accordance with (TBD-024).

##### 4.1.4.4.2 Metadata

USIS Systems shall include the available metadata with imagery and image products.

USIS Systems shall provide metadata associated with Sun Raster formatted files using the IPL Data File defined in paragraph 50.8 of the *Interface Control Document for IPL 1.0/1.1*, April, 1996.

The IPL Data File shall be named in accordance with paragraph 30.1.1 of the *Interface Control Document for IPL 1.0/1.1*, 1947089A, April, 1996.

#### 4.2 Exploitation Support Interoperability Requirements (TBD-027)

## **5 Verification**

### **5.1 Verification Methods**

The implementation of the requirements identified in Section 4 of this document shall be verified as defined in the following paragraphs. The methods of verifying conformance to the requirements of Section 4 are certification, testing, and intersystem demonstration.

### **5.2 Interoperability Certification**

#### **5.2.1 NITFS Certification**

NITFS Certification plays an important role within the USIS. One of the fundamental objectives of A3I is to deliver systems that are truly interoperable. The NITFS Certification program is designed to greatly improve the interoperability of systems exchanging image files formatted in accordance with the NITFS. Achieving NITFS Certification to the appropriate compliance level(s) prior to integration at one or more of the USIS sites will reduce the risk that a USIS System will be unable to successfully exchange image data with other USIS components.

##### **5.2.1.1 USIS NITFS Certification Requirements**

NITFS Certification requirements are divided into “generate (or “pack”)” requirements and “receive (or “unpack”)” requirements. Systems that generate NITF 2.0 files do not need to implement all of the NITFS as long as they do not implement anything that is not allowed by the NITFS. Systems that receive and process NITF 2.0 files must implement all NITFS functionality (within the bounds of one or more NITFS-defined certification levels) to ensure total interoperability.

Implementors should recognize that USIS systems may perform other roles within site architectures that may require additional compliance certification.

All NITFS certification shall be performed by the JITC in accordance with JIEO Circular 9008, 30 June 1993.

### **5.2.2 CIIF Certification**

Certification testing by the JTC will build on validation test scenarios and will assure that core requirements are satisfied by various implementations. After formal adoption of the CIIF specifications, the JTC will perform formal certification testing.

USIS Systems shall be certified to be compliant with the Image Access Services Specification in accordance with the requirements in paragraph 4.1.2.1 of this document. Certification shall be performed as defined in (TBD-025).

## **5.3 Testing**

The test program will enable validation testing of candidate server and client applications in a testbed environment to validate the interface specification and to demonstrate interoperability of multiple clients with multiple or individual servers prior to deployment in an operational environment.

### **5.3.1 Reference Implementation Development and Validation Testing**

*Reference Implementations* of the interfaces described in this document will be developed by the Government as part of the A3I Program. These Reference Implementations will be made accessible in a testbed environment where other A3I and client developers can install their systems and validate their implementations. Any anomalies or issues resulting from this validation testing will be fed back into the CIIP and appropriate interface specifications. This will demonstrate the adequacy of the interface specification and any changes resulting from it will be processed via RFCs.

## **5.4 Intersystem Demonstrations**

The Central Imagery Office will conduct periodic demonstrations of USIS functionality during the development phases. The success of these demonstrations will be determined by the compliance of the USIS Systems to the requirements contained in Section 4 of this document.

The description of the A3I demonstrations is contained in *Demonstration Management Plan for the A3I, (CIO-2160)*.



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**6 Notes**

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**6.1 Acronyms**

A3I	Accelerated Architecture Acquisition Initiative
API	Application Program Interface
CAF	Catalog Access Facility
CAWS	Commercial Analyst Workstation
CGM	Computer Graphics Metafile
CIIF	Common Imagery Interoperability Facilities
CIIP	Common Imagery Interoperability Profile
CIL	Command Image Library
CIO	Central Imagery Office
CIP	Common Imagery Processor
CORBA	Common Object Request Broker Architecture
COTS	Commercial Off-the-Shelf
DCT	Discrete Cosine Transform
DE	Dissemination Element
DPCM	Differential Pulse Code Modulation
EPS	Enhanced Processing System
ESD	Exploitation Support Data
FTP	File Transfer Protocol
GOTS	Government Off-the-Shelf (GOTS)
GFE	Government Furnished Equipment
HDBS	Host Data Base System
HTTP	Hypertext Transfer Protocol
IAF	Image Access Facility
IDF	Image Dissemination Facility
IDL	Interface Definition language
IESS	Image Exploitation Support System
IFS	Image File Server
IMF	Image Mensuration Facility
IP	Internet Protocol

IPA	Image Product Archive
IPL	Image Product Library
IP&NF	Image Profile and Notification Facility
IS&R	Image Storage and Retrieval
ISO	International Standards Organization
JPEG	Joint Photographic Experts Group
JRD	Joint Requirements Document
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
NES	National Exploitation System
NIL	National Image Library
NITF	National Image Transmission Format
NITFS	National Image Transmission Format Standards
OMG	Object Management Group
SDE	Support Data Extensions
SPIA	Standards Profile for Imagery Archive
SPID	Standards Profile for Image Distribution
TFRD	Tape Formats Requirements Document
TIFF	Tagged Image File Format
TBD	To Be Determined
TBR	To Be Resolved
URL	Uniform Resource Locator
USIS	United States Imagery System

## 7 Appendices

### 7.1 NITF 2.0 Image Header Format

Table 7.1-1 contains additional implementation details supplementing information contained in the *CIO Standard Profile for Image Distribution*, Table A-I.

No	Field	Value	Comment
4	OSTAID	(Generated)	DEnn, NIL, CILnn, IPLnnn, CIPnn where nn=site#. Others per implementing PO/User organization requirements
7	FSCLAS	(Generated)	Highest classification for all information contained within the NITF file.
8	FSCODE	(Generated)	xxxxbyyyyyyy, where xxxx is security codeword; b is ASCII space; and yyyyyyy is control channel caveat
9	FSCTLH	(Generated)	wwwwwwbz where wwwwww is dissemination restriction word; b is ASCII space; and z is security indicator (SECIND)
10	FSREL	(Generated)	Per implementing PO/User organization requirements
12	FSCTLN	(Generated)	Per implementing PO/User organization requirements
13	FSDWNG	(Generated)	Per implementing PO/User organization requirements
14	FSDEVT	(Generated)	Per implementing PO/User organization requirements
15	FSCOP	00000	Not Used

16	FSCPYS	00000	Not Used
18	ONAME	(Generated)	Per implementing PO/User organization requirements
19	OPHONE	Spaces	Not Used
46	NUMDES	000	Not Used
52	NUMRES	000	Not Used
58	UDHDL	00000	Not Used
60	XHDL	00000	Not Used

Table 7.1-1NITF Image Header Implementation for A3I

## 7.2 NITF 2.0 Image Sub-Header Format

Table 7.2-1 contains additional implementation details supplementing information contained in the *CIO Standard Profile for Image Distribution*, Table A-II.

No	Field	Value	Comment
2	IID	0000000000	Actual Image ID is in ITITLE
5	ITITLE	(Generated)	Original 40 character IMP ID or 24 character image ID followed by spaces
6	ISCLAS	(Generated)	classification for image data in this subfile
7	ISCODE	(Generated)	xxxxbyyyyyyy, where xxxx is security codeword; b is ASCII space; and yyyyyyy is control channel caveat
8	ISCTLH	(Generated)	wwwwwwwbz where wwwwww is dissemination restriction word; b is ASCII space; and z is security indicator (SECIND)
9	ISREL	(Generated)	Per implementing PO/User organization requirements
11	ISCTLN	(Generated)	Per implementing PO/User organization requirements
12	ISDWNG	(Generated)	Per implementing PO/User organization requirements
13	ISDEVT	(Generated)	Per implementing PO/User organization requirements
15	ISOURCE	(Generated)	Use appropriate classification and source acronyms
18	PVTYPE	INT	Integer format

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No	Field	Value	Comment
19	IREP	(Generated)	MONO for monochrome; COLOR-8 for 8 bit color; COLOR-24 for 24 bit color
22	PJUST	R	Pixels are right justified
29	IC	NC or C3	NC for uncompressed; C3 for JPEG compressed
30	COMRAT	(Generated)	Omit if IC=NC; Valid rate if IC=C3
57	NBPP	8 or 16	8 for 8 bit images; 16 for 9-16 bit images
58	IDLVL	001	
59	IALVL	000	
60	ILOC	0000000000	First pixel is not offset
61	IMAG	(Generated)	'1.0' for full resolution (R0); '/2' for half resolution (R1) through '/128' for R7
62	UDIDL	00000	No user defined data
65	IXSHDL	(Generated)	Length of all incorporated controlled extensions plus 3
66	IXSOFL	000	No overflow required

Table 7.2-1 - NITF Image Sub-Header Implementation for A3I

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**7.3 NITF 2.0 Symbol Sub-Header Format**

Table 7.3-1 contains implementation details supplementing information contained in the *National Imagery Transmission Format-Version 2.0 (MIL-STD-2500)*., Table VI.

No.	Field	Description	Size	Value Range	Type	Value		Comment
1	SY	File Part Type	2	SY	R	SY		NITF 2.0 reqmts(Note: A)
2	SID	Symbol ID	10	Alphanumeric	R	(Generated)		Note A
3	SNAME	Symbol Name	20	Alphanumeric	O	(Generated)		Note: A
4	SSCLAS	Symbol Security Classification	1	T,S,C,R, or U	R	(Generated)		Based upon classification of Symbol or per system high classification
5	SSCODE	Symbol Codewords	40	Alphanumeric	O	(Generated)		xxxxbYYYYYYY, where xxxx is security codeword; and b is an ASCII Space; and YYYYYYY is control channel caveat based on classification of Symbol or per system high classification



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No.	Field	Description	Size	Value Range	Type	Value		Comment
6	SSCTLH	Symbol Control and Handling	40	Alphanumeric	O	(Generated)		WWWWWbZ, where WWWWWW is the Dissemination Restriction word (e.g. NOFORN, 6 ASCII Spaces); and b is an ASCII Space; and Z is the security indicator value, if any or space
7	SSREL	Symbol Releasing Instructions	40	Alphanumeric	O	(Generated)		Note C
8	SSCAUT	Symbol Classification Authority	20	Alphanumeric	O	DoD S-5210.51 (M-1)		Note: C
9	SSCTLN	Symbol Security Control Number	20	Alphanumeric	O	(Spaces)		Note: C
10	SSDWNG	Symbol Security Downgrade	6	Alphanumeric	O	(Generated)		Note: C
11	SSDEVT	Symbol Downgrading Event	40	Alphanumeric	C	(Omit)		Note A
12	ENCRYP	Encryption	1	0=Not Encrypted 1=Encrypted	R	0		Note: A
13	STYPE	Symbol Type	1	B for bit-mapped; C for CGM; O for Object	R	(Generated)		CGM recommended for all symbol and label implementations
14	NLIPS	Number of lines Per Symbol	4	0-9999	R	0		Note: A
15	NPIXPL	Number of Pixels per line	4	0-9999	R	0		Note: A

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No.	Field	Description	Size	Value Range	Type	Value		Comment
16	NWIDTH	Line Width	4	0-9999	R	0		Note :A
17	NBPP	Number of bits Per Pixel	1	0-8	R	0		Note: A
18	SDLVL	Display Level	3	1-999	R	(Generated)		(Note: A)
19	SALVL	Attachment Level	3	0-998	R	(Generated)		(Note: A)
20	SLOC	Symbol Location	10	rrrrrcccc	R	(Generated)		(Note: A)
21	SLOC2	Second Symbol Location	10	rrrrrcccc	O	(Generated)		(Note: A)
22	SCOLOR	Symbol Color	1	Note A	R	(Space)		(Note: A)
23	SNUM	Symbol Number	6	Note A, table IV	O	000000		(Note: A)
24	SROT	Symbol Rotation	3	0-359	R	000		(Note: A)
25	NELUT	Number of LUT Entries	3	0-256	R	000		(Note: A)
26	DLUT	Symbol LUT Data	2	Pixel values in Order	C	(omit)		(Note: A)
27	SXSHDL	Extended Subheader Data Length	5	0-08833	R	(Generated)		Note: A
28	SXSOFL	Extended Subheader Overflow	3	0-999	C	(Gen/omit)		Note: A
29	SXSHD	Extended Subheader Data	*	Controlled Tagged Record Extensions	C	(Gen/omit)		(Note A)

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No.	Field	Description	Size	Value Range	Type	Value		Comment
@ see Note A * As specified in SHSHDL field								
<b><u>KEY FOR TABLE</u></b>  Generate field format specification shall be as specified in JIEO Circular 9008 Paragraph 5-5 NITF 2.0 File Format Criteria General (items A-J). NITF Type column: <b>R</b> -required, <b>O</b> -optional, <b>C</b> -conditional. Note A: Field implementation shall be as required by NITF 2.0 Format Specification(MIL STD 2500, 18 June 1993) and JIEO Circular 9008 30 June 1993 NITFS Certification Test and Evaluation Program Plan. Note B: Field should reflect implementing PO/User organization requirements. See Note A for format guidance. Note C: Field shall reflect security requirements of data within file as required by appropriate security authority. See Note A for format guidance.								

Table 7.3-1  
NITF Symbol Sub-Header Implementation for A3I

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**7.4 NITF 2.0 Text Sub-Header Format**

Table 7.4-1 contains implementation details supplementing information contained in the *National Imagery Transmission Format-Version 2.0 (MIL-STD-2500)*., Table XIII.

No.	Field	Description	Size	Value Range	Type	Value		Comment
1	TE	File Part Type	2	TE	R	TE		NITF 2.0 reqmts(Note: A)
2	TEXTID	Text ID	10	Alphanumeric	R	(Generated)		Note A
3	TXTDT	Text Date & Time	14	DDHHMMSSZMONYY	R	(Generated)		The time (zulu) of the origination of the text where DD is the day of the month (01-31), HH is the hour (00-23), mm is the minute (00-59), the character Z, MON is the first three characters of the month, and YY is the last two digits of the year.
4	TXTTIL	Text Title	80	Alphanumeric	O	(Generated)		Note A
5	TSCLAS	Text Security Classification	1	T,S,C,R, or U	R	(Generated)		Based upon classification of Text or per system high classification

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No.	Field	Description	Size	Value Range	Type	Value		Comment
6	TSCODE	Text Codewords	40	Alphanumeric	O	(Generated)		xxxxbYYYYYYY, where xxxx is security codeword; and b is an ASCII Space; and YYYYYYY is control channel caveat based on classification of Symbol or per system high classification
7	TSCTLH	Text Control and Handling	40	Alphanumeric	O	(Generated)		WWWWWbZ, where WWWWW is the Dissemination Restriction word (e.g. NOFORN, 6 ASCII Spaces); and b is an ASCII Space; and Z is the security indicator value, if any or space
8	TSREL	Text Releasing Instructions	40	Alphanumeric	O	(Generated)		Note: C
9	TSCAUT	Text Classification Authority	20	Alphanumeric	O	DoD S-5210.51 (M-1)		Note: C
10	TSCTLN	Text Security Control Number	20	Alphanumeric	O	(Generated)		Note: C
11	TSDWNG	Text Security Downgrade	6	Alphanumeric	O	(Generated)		Consistent with OADR /Note: C
12	TSDEVT	Text Downgrading Event	40	Alphanumeric	C	Generated)		Note A
13	ENCRYP	Encryption	1	0=Not Encrypted 1=Encrypted	R	0		Note: A

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No.	Field	Description	Size	Value Range	Type	Value		Comment
14	TXTFMT	Text Format	3	JTC, STA, OTH	R	STA		ASCII to be used for all text
15	TXSHDL	Extended Subheader Data Length	5	0-09677	R	(Generated)		Note: A
16	TXSOFL	Extended Subheader Overflow	3	0-999	C	(Gen/omit)		Note: A
17	TXSHD	Extended Subheader Data	*	Controlled Tagged Record Extensions	C	(Gen/omit)		Note A
@ see Note A * As specified in TXSHDL field								
<b>KEY FOR TABLE</b> Generate field format specification shall be as specified in JIEO Circular 9008 Paragraph 5-5 NITF 2.0 File Format Criteria General (items A-J). NITF Type column: <b>R</b> -required, <b>O</b> -optional, <b>C</b> -conditional. Note A: Field implementation shall be as required by NITF 2.0 Format Specification(MIL STD 2500, 18 June 1993) and JIEO Circular 9008 30 June 1993 NITFS Certification Test and Evaluation Program Plan. Note B: Field should reflect implementing PO/User organization requirements. See Note A for format guidance. Note C: Field shall reflect security requirements of data within file as required by appropriate security authority. See Note A for format guidance.								

Table 7.4-1  
NITF Text Sub-Header Implementation for A3I

## **7.5 A3I Scenarios and Use Cases (TBD-026)**

*[Note: Intent of this section is to provide background information on how it is envisioned that the facilities will be used. Future releases of the CIIP will integrate appropriate scenarios with the facility definitions to demonstrate application of the facilities.]*